

From glowbugs@devp214.theporch.com Tue Jan 28 12:37:43 1997
Return-Path: <glowbugs@devp214.theporch.com>
Received: from devp214.theporch.com (devp214.theporch.com [192.150.244.22])
by uro.theporch.com (8.8.5/AUX-3.1.1)
with ESMTP id MAA05730 for <shimshon@theporch.com>;
Tue, 28 Jan 1997 12:37:41 -0600 (CST)
From: glowbugs@devp214.theporch.com
Received: from devp214.theporch.com (localhost [127.0.0.1])
by devp214.theporch.com (8.8.4/SCO-5.0.2) with SMTP
id SAA05371; Tue, 28 Jan 1997 18:35:33 GMT
Date: Tue, 28 Jan 1997 18:35:33 GMT
Message-Id: <199701281835.SAA05371@devp214.theporch.com>
Errors-To: ws4s@infoave.net
Reply-To: glowbugs@devp214.theporch.com
Originator: glowbugs@devp214.theporch.com
Sender: glowbugs@devp214.theporch.com
Precedence: bulk
To: Multiple recipients of list <glowbugs@devp214.theporch.com>
Subject: GLOWBUGS digest 429
X-Listprocessor-Version: 6.0 -- ListProcessor by Anastasios Kotsikonas
X-Comment: Please send list server requests to listproc@theporch.com
Status: 0

GLOWBUGS Digest 429

Topics covered in this issue include:

- 1) Regen Funzies and Hot Contestin!
by rdkeys@csemail.cropsci.ncsu.edu
- 2) Electrolytic Exploding Capacitors are DANGEROUS!!!!
by rdkeys@csemail.cropsci.ncsu.edu
- 3) I heard Fr. Bruce's fine 50C5 puffer! Yeah!
by rdkeys@csemail.cropsci.ncsu.edu
- 4) Impedence into a Variac
by jefffd@coriolis.com (Jeff Duntemann)
- 5) Re: Impedence into a Variac
by jefffd@coriolis.com (Jeff Duntemann)
- 6) digest
by henrichs@nead.com (Robert Henrichs)
- 7) digest
by henrichs@nead.com (Robert Henrichs)
- 8) Re: digest
by "Brian Carling" <bry@mail1.mnsinc.com>
- 9) RCA Radiogram
by jkh@lexis-nexis.com (John Heck)

Date: Mon, 27 Jan 1997 15:06:09 -0500 (EST)
From: rdkeys@csemail.cropsci.ncsu.edu
To: glowbugs@theporch.com, boatanchors@theporch.com
Cc: rdkeys@csemail.cropsci.ncsu.edu ()
Subject: Regen Funzies and Hot Contestin!
Message-ID: <9701272006.AA133799@csemail.cropsci.ncsu.edu>

>From: Robert Nickels <ranickel@mwci.net>
>Subject: Non-Superhet data

Well, Bob, I will bite the bullet on this one, since I probably have more hours aboard the watch on regens than any fool since Hector was a pup..... I have been running them on HF as the main station rx for 25 years on CW, an' that almost qualifies me fer the loony ether skyhook bin.

>Well it's either cabin fever or the recent thread on super vs.
>regular-heterodynes that got me to thinking about regens again.
>Not the one-tuber homebrew I get off the shelf every winter or the
>wonderful Knight Span Master that was my first "window to the world",
>but real, honest-to-goodness blue-collar regenerative communications
>receivers for HF.

Well, to begin with, there are precious few real ``blue-collar'' workhorse regens on HF. There are many on LF/MF. There are only about six commercial or military HF regen receivers that were ever used on HF from what I have been able to find out. This is exclusive of the ham band stuff such as the National SW-3. There were lots of ham band stuff built in the 20's and 30's. Typical examples are the Chicago Radio Labs Paragons and the various kit receivers popular in the 20's/30's, and converted bcst receivers that were edged up to the infamous 200 meters and down frequencies..... ``those useless short waves.....'' as they were called, then. Most all of the ham band stuff was pretty simple, and never quite reached the state of the art as found in commercial HF or MF regen receivers.

The first of the commercial HF regenerative receivers was the classic RCA AR-1496 receiver from the mid 20's. It was used in airport gnd/air communications and in commercial point to point HF work. There were not a great many made, and I only know of one still in existence, in an Antique Wireless Association (AWA) collection (works great too). It is covered in fair detail in Sterling's Radio Manual (1st or 2nd edition, 1927/1928), and in Duncan and Drew's Radio Telephony and Telegraphy from 1931. An article about it came out in the Old Timer's Bulletin --- OTB from the AWA. The AR-1496 embodies all of the thinking of the 1920's regarding regenerative receiver design. It has a pentode RF stage using a '22 tube, and '01A's in the detector and two step

audio (2 audio stages). A '112 was used sometimes in the last audio stage. The receiver is completely shielded in a box about 8 inches square and 28 inches wide, with a Faraday shield in the antenna input circuit. It covered a frequency range of 3750 through 25000 khz with a set of plug-in coils. There were a set of medium wave coils for bcst band through 80M coverage. It had three velvet vernier dials for rf, detector, and throttle condenser tuning. The design was also built as an aircraft receiver, the model AR-1308, covering the frequencies of 240-500khz and 3300-6700khz. Both of these sets ran on battery power (6/45/135vdc). As a generic design, they are the epitome of the early triode regenerative receiver, with the addition of an RF stage for isolation. This would be a fairly simple, yet workable design for anyone contemplating an early style regenerative receiver for serious HF work. Several ham designs followed this general pattern, including the 1929-1932 classics from the ARRL Technical Department.

The second commercial HF regenerative receiver was the one used in the Pan American Airways aircraft in the 1930's. These were very tiny little two tube (from what I remember being described in Sterling's Radio Manuals) battery receivers that used '30 tubes. They were the standard two tube tickler circuit, in a metal box about the size of a kid's school lunch box. I have heard one of the Pan Am ops say that it was not all that bad for its day, once you got used to it.

The third commercial HF regenerative receiver was used in the Army ``mule pack set'' radio (SCR-1xx) that used a two tube transmitter and a 4 tube regenerative receiver in a small wooden box that was designed to be carried on the back of a mule. It was designed at the Signal Corps Laboratories in Ft. Monmouth, NJ, and the receiver was a BC-187, I think. My OM was in the Signal Corps at Ft. Monmouth then (1932) when they designed and tested it, and he got to play with it as a grunt. His recollection of it was that it was not all that bad for what it was designed to do --- communicate in a 5-10 mile range for artillery spotting. I have had the good fortune to own the set, about 10 years back, and have actually used it on Field Day (1982). In a competitive FD environment, it is less than optimal, although, in the average QSO, it is a very hot receiver and would compare favorably with most ham non-xtal filter receivers in sensitivity. In selectivity, it was quite good, maybe 1kc for 6db down (just guessing but it was eminently usable in the average QSO on 80M). It was not what I would call a sideband slicer type of regenerative receiver. Prior to this receiver there were a couple of early Army artillery box sets for field use that had regenerative receivers, but they were mostly a 1925 style design, and were very poor at anything except very short range communication.

The last commercial HF regenerative receiver was another RCA design,

the classic navy RAL regenerative receiver. If you are serious about a good HF regenerative receiver, the RAL is the only thing that merits consideration. This receiver was designed about 1936, and built through WWII in considerable numbers. It is a 5 tube TRF design with some VERY advanced features that make it one of the hottest CW sleeper receivers anyone can get their hands on. It has 2 stages of tuned pentode RF (6D6), a pentode electron coupled detector (6D6), a pentode first audio (6D6), a pentode audio output (41), AND an audio derived AGC using a pentode (41). Although the AGC is subject to considerable distortion, it will work CW very effectively when properly set up. The advanced features are its audio filtering, which is second to none, in the vacuum tube era. Between the detector and the first audio tubes are a pair of filters. The first is an audio low-pass filter that rejects everything above about 1400 hz. The second is a HI-Q peaked filter adjustable from about 300 hz to 1400 hz. When the regeneration is set correctly, the passband is about 2.5khz wide, normally, but when set on the ragged edge of regeneration it drops down to well below 1kc cutoff. Add the low-pass filter and ANY strong station adjacent is gone. Add the tunable passband filter and you can pick one of 6 or so stations that might be in that 1400 hz passband, and nuke the rest. The only problem is that it can pick of both sides of zero beat, so sometimes you can get the signal within the passband on the other side of zero beat, if you are not careful in tuning. This is why I like it --- great filters for CW! The main drawback of the RAL is that it is nil on dial calibration. You get a 0-1000 logging scale and that is all. But, if you set it up using a good LM or BC-221 and calibrate the dial scale, you can set it back to within 1khz quite easily, anywhere on the dial. There is a fine vernier dial that has a range of about 2khz for precise tuning once the dial scale is set. The audio output is 600 ohm at about half a watt --- good for headphones and the LS-166 style metal cone jeep mounted ruggedized speaker. Also, if you resonate the filters on the metal speaker cone resonant frequency, it acts as an additional stage of filtering at about 800hz. There was an RAL competitor put out by National, I think it was the Model RBL or something like that. How well it compares to the RAL, I don't know, but it seems to lack some of the advanced features of the RAL, from what I know about it.

There may have been a few others in HF service that I have not been aware of, especially in foreign services, but in the US circles, that is about all there is on HF. Mackay and RCA may have made an HF regen receiver in the 30's for shipboard use, although, I am not for sure on this. Sterling's Radio Manual, 3rd edition, 1935, would be the source on that. There may have been a small boxy Mackay receiver with tiny plug-in coil drawers (forget the number right off). There was also the famous WWII RU series receivers, but they used a heterodyne oscillator, if my memory serves me correctly and not a true variable regenerative detector on CW.

On MF, the story is different. Commercial regenerative receivers for MF were being used into the late 80's aboard ship. RCA was still making a main MF regenerative receiver for shipboard use as late as 1966. I have one (AR-8506 I think it is) with that date. Mackay was also making a transistorized emergency MF regenerative receiver in rackmount size as an auxiliary receiver for the synthesized gear as late as about 1975 or a little later. Some ships are supposed to still be carrying some of these around. Most of that kind of thing will become surplus by 1999 as all the old marine gear is junked. In the 40's and 50's the Mackay 128AY and the RMCA AR-8506 were quite respectable performers at sea, and very simple to maintain. I still use the 128AY for monitoring 600M silent periods when I am in the shack. It is probably possible to change the coils out on these for 160/80M coverage, but that would be a bit on the sacrilege side, for these old mariners. BUT, a simple xtal controlled heterodyne converter would easily give HF coverage for 160/80/40M to any of these old MF regen receivers. The very early MF regen gear basically follows the design of the AR-1496, sans rf stage. These MF regen receivers are ALL directly traceable in lineage to the work of the Washington Navy Yard Radio Laboratories, back in WWI. The original design was the Navy SE-143 receiver which was basically just a tuner and an outboard regen detector box. Later, the designs were improved when Prof. Hazeltine went to work there, and became the famous SE-12xx and SE-14xx series receivers where the detector or the detector and audio stages were added into the main tuner box. The commercial folks got wind of these in WWI surplus, and immediately the ``Navy Standard'' designs (Wireless Specialty Apparatus Co. IP-500 series designs are classic examples) became the standard for the shipboard and commercial MF circuits. Later, when RCA took over WSAPCo, the design was marketed for years as the RCA model IP-501A. It was used well into the WWII era, until replaced by later regen sets with RF stages for isolation, such as the Mackay 128 and the like. We used the SE-1440 and IP-501A to monitor NMN 500khz closings, and they were quite good as basic receivers. It was later developed into the AR-1496 style, and later became the later RAL, each time being improved over the marine lineage. Thus, the RAL represents the epitome and end of the line of the WWI designs from Hazeltine's hands.

>I know that some of you know all about them, and their mystical three-
>letter model numbers. I also know that some pretty esteemed members
>of this list actually *use* them on HF! Problem is, for those of
>us who grew up with Allied catalogs instead of TMs, this is ancient
>folklore! Moores books are super for superhets, but are mum on the
>subject of regens.

Well, I used the RAL on the 160M CQ WW this weekend, and netted 44 states, 3 Canadian provinces, and 7 additional foreign countries including France, all easily heard. I was able to hear the VK folks on the 150 foot long

wire, but could not work them. Everything else was copy as good or better than the Kenwood TS-140S and Collins R-388 I used for monitoring the band edges (remember the nil dial calibration on the RAL, and my transmitter, a WWII RMCA ET-8019A only has a 0-200 dial scale with no calibration, so I had to be very careful that I was not out of the band and actually was on 1801.00 khz). ALWAYS keep a digital monitor rx on when using uncalibrated regen receivers and OT transmitters, right? An LM or BC-221 would work also. As it was, it was a 5 fisted operation to listen on the RAL, check on the TS-140 for band edge, and zerobeat on the R-388 with the 200 watt oscillator off the antenna, and then bring all into a 50hz zerobeat of each other to work the QSO. While hunting and pouncing, it usually took about a minute to get set up on a new station, before I could hit key down and expect to get the QSO first time. When I set up on 1801, for an extended 8 hour run starting at noon on Saturday, I could monitor the offset of about 800hz in the Collins as a sidetone generator, and it was comfy enough to run 100 stations or a little more while the band was almost dead. After the band began to pick up, several stations tried to slip in under my 1khz, but after a while they gave up. Later, someone parked on 1800.500, with a KW, and that finally ran the RAL off, when my ears started going south. After that, I had to go back to the hunt and pounce mode for results, and to round out the attempt at the WAS with the regen receiver. In the non-contest situation such as the BA/GB nets, it takes about 10 seconds to bring the gear together within a khz of each other.

One thing nice about a REGEN receiver is that it will swamp in QSK, and has instant recovery when using a 6 foot or so auxiliary antenna as the receiving antenna. You can still hear all but the weakest stations on that 6 foot antenna with the RAL. One time, I forgot to hook up the RAL to the antenna, and only had the 4 inch interconnect wire from the end of the antenna relay to the RAL, and it would still copy W1AW and the locals, with full headfone volume. When the lead was disconnected all went silent. Not bad for sensitivity. ON HF, the regen detector will hear just about anything that the ricenboxen will. The only thing is that regens are slightly persnickety to run, and do require a bit of patience to get all set up correctly. But, that is half the fun of Boatanchorin' and GlowBuggin'.

>So - could anyone brief us in? I'd be interested in knowing what
>the best regenerative HF receivers are, how well they work, and of
>course if anyone has one they'd like to get rid of...?

After I go on the final watch, my RAL's are up for grabs.... until then, well....., ye gots ta prys them from me cold leaden fingern, next ta me ol' black an rusty bug, an' dusty Baldy micas.....

>73, Bob W9RAN

73/ZUT DE NA4G/Bob UP

Date: Mon, 27 Jan 1997 15:21:52 -0500 (EST)
From: rdkeys@csemail.cropsci.ncsu.edu
To: glowbugs@theporch.com, boatanchors@theporch.com
Subject: Electrolytic Exploding Capacitors are DANGEROUS!!!!
Message-ID: <9701272021.AA133863@csemail.cropsci.ncsu.edu>

Alas, after getting the AN/SRT-14 bigboyz rig up and running with some sort of reasonableness, yesterday, I blew an electrolytic cap on the 250 volt regulated line with a vengeance. It went off quite literally like I would have expected a cherry bomb to go off --- inside a rig. Alas, I now have a pretty looking, dead AN/SRT-14, full of shrapnel, busted tubes, assorted torn electronic gilliwidjets and whatzits, and tinfoil and waxed paper, not counting the black burned goo. At least I was not injured. The smoke and smell finally aired out after an hour of the old open doors and windoz routine.

Moral of the story ---- BE CAREFUL around electrolytics if they blow!

Had that electrolytic biggiething not been retained by the massive iron frame of the rig, I would have been picking shrapnel from somewhere. Anyone got any suggestings for cleaning the worst looking black burned goo you ever saw out of a rig? Anyone know if the burn residue is deleterious to wiring harnesses or other electronic parts?

Thanks

73/ZUT DE NA4G/``Exploding'' Boatanchor Bob

Bygollys..... I never knew they would go off quite like that! There must be more than 50 of those things in all the power lines of that rig!

Date: Mon, 27 Jan 1997 15:08:57 -0500 (EST)
From: rdkeys@csemail.cropsci.ncsu.edu
To: glowbugs@theporch.com
Subject: I heard Fr. Bruce's fine 50C5 puffer! Yeah!
Message-ID: <9701272009.AA133812@csemail.cropsci.ncsu.edu>

I had the good fortune to work Fr. Bruce on his fine lil 50C5 puffer last night on the BA/GB QRG. It were a fine lil ether burner! Kudos and Congrats! Let's hear more of those fine lil puffers!

73/ZUT DE NA4G/Bob UP

Date: Mon, 27 Jan 1997 15:05:35 -0700
From: jeffd@coriolis.com (Jeff Duntemann)
To: glowbugs@theporch.com
Subject: Impedence into a Variac
Message-ID: <1.5.4.32.19970127145822.009827bc@165.247.88.2>

Hi gang--

This is a slightly loopy question but it relates to an idea that I had:

How do you calculate what the audio frequency impedence would be looking into the full winding of a normal 120v Variac? I've always calculated transformers from the relationship between the turns in the two windings. If there's only one winding, what would a (transistor, in this case) audio stage "see" looking into the Variac?

I had this notion you could use a Variac in the lab to empirically figure out a low-impedence match between a power transistor output stage and an 8-ohm (or whatever ohm) speaker. Put the audio into the full winding and the speaker to the tap if the speaker is a lower impedence than the transistor, and vice versa if the speaker is greater. Adjust for maximum power transfer and then see where the tap is.

Could this work? I know Variacs aren't designed to work at audio but I'm not looking for hi-fi here; this would be a way of figuring a matching autotransformer to be wound with finer wire on a middling toroid. (I know there are circuits calling out such an audio matching autotransformer, but I've never seen anything on how they're calculated.) Ultimately I want to use this on a 12V space charge tube regen system with a period transistor audio final.

Any thoughts?

--73--

--Jeff Duntemann KG7JF
Scottsdale, Arizona

Date: Mon, 27 Jan 1997 15:44:45 -0700

From: jeffd@coriolis.com (Jeff Duntemann)
To: rtg@ee.duke.edu (Rhett T. George)
Cc: glowbugs@theporch.com
Subject: Re: Impedence into a Variac
Message-ID: <1.5.4.32.19970127153732.00f4d904@165.247.88.2>

At 05:21 PM 1/27/97 -0500, you wrote:

> - Jeff -

>

>Small variacs with little iron may work satisfactorily in the audio-matching
>application you suggest without requiring large amounts of current from
>the transformer.

Yes! I have a dainty little one less than 2" across, wound with (I would
guess) #24 wire. I'm not talking about those monsters that you'd use in a
California Kilowatt...

>The iron must be magnetized by the current flowing from
>the source.

Transistor finals source considerable current, unless I misunderstand,
because they operate at a fairly low voltage and have to push more electrons
to get to any respectable power.

>The turns ratio on the Variac goes with the voltage setting.
>If the amplifier is connected to the 120 V input and the speaker sounds
>best with the knob at 40 V, the turns ratio is 3 to 1. The impedance
>goes as the turns ratio squared. The amplifier in this 3 to 1 case will
>"see" 9 times the load impedance.
>
>Hope this helps.

It does! I intend to spend an evening on this and see what happens. Thanks
for your help!

--73--

--Jeff Duntemann KG7JF
Scottsdale, Arizona

Date: Mon, 27 Jan 1997 23:49:45 -0500 (EST)
From: henrichs@nead.com (Robert Henrichs)
To: glowbugs@devp214.theporch.com
Subject: digest
Message-ID: <199701280449.XAA21657@mail1.panix.com>

Is there a digest version of this list? I can't find my regular email messages anymore!

+*****+
| You'll find me at: henrichs@nead.com ;=] |
+*****+

Date: Mon, 27 Jan 1997 23:53:37 -0500 (EST)
From: henrichs@nead.com (Robert Henrichs)
To: glowbugs@devp214.theporch.com
Subject: digest
Message-ID: <199701280453.XAA21930@mail1.panix.com>

Is there a digest version of this list? I can't find my regular email messages anymore!

+*****+
| You'll find me at: henrichs@nead.com ;=] |
+*****+

Date: Tue, 28 Jan 1997 04:34:30 +0000
From: "Brian Carling" <bry@mail1.mnsinc.com>
To: henrichs@nead.com
Subject: Re: digest
Message-ID: <199701281234.HAA00619@news2.mnsinc.com>

> Is there a digest version of this list? I can't find my regular
> email messages anymore!
> +*****+ | You'll find me
> at: henrichs@nead.com ;=] |
> +*****+

Yes Robert, I believe there are ARCHIVES of this list available at N6EV's web site.

I have the URL address for it listed at
<http://www.mnsinc.com/bry/hamfiles.htm>

Find the link there to N6EV's site.

ENJOY!

*** 73 from Radio AF4K / G3XLQ in Gaithersburg, MD USA *
** E-mail to: bry@mnsinc.com *
*** See the great ham radio resources at: *
** <http://www.mnsinc.com/bry/> *

Date: Tue, 28 Jan 97 09:29:22 EST
From: jkh@lexis-nexis.com (John Heck)
To: boatanchors@theporch.com, glowbugs@theporch.com
Subject: RCA Radiogram
Message-ID: <9701281429.AA12029@beans.lexis-nexis.com>

Folks,

I picked up a very interesting item at an antique show over last weekend which I would like to share with the group. Even though it's not *strictly* a BA nuts and bolts thing it's got an unmistakable boatanchor quality to it that I found appealing. The item is a two page "RADIOMARINE CORPORATION of AMERICA RADIOGRAM", 11 by 14 format with a large, bright red letterhead. The radiogram is from the sparks on-

board the SS Shickshinny, and was mailed from Savannah sometime in 1932. The fellow

signs his name Paul "Sparky" Szabo, and seems to be a young man serving as the radio

operator on the Shickshinny. Paul is writing to a former instructor at an avionics school in Oklahoma. The letter is surprisingly well written, and in it Paul descri-

bes his experiences in trying to purchase an airplane, and about his life in general.

Unfortunately, not much about his shipboard duties, though.

I thought the letter was pretty interesting, and of mild historical interest from the wireless point of view. I'm going to take it up to the Kinko's copies and see what it would take to make color copies, and have a few made. I'd like to share it with anybody who would want a copy. If you would like one please let me know(so I'll

know how many to have made) and send me a 11x14 legal sized, self addressed stamped

envelope(there will only be 3 sheets), if you don't want it folded, or a regular business SASE if you don't care if its folded, and I'll send you one as soon as I get the copies made. No charge for this, of course, I'm sure copies will be cheap.

Regards,

John Heck, KC8ETS
1009 Donson Drive
Dayton, Ohio 45429
(513)865-7036(work)

jkh@lexis-nexis.com

End of GLOWBUGS Digest 429
